LETTER TO THE EDITOR

A Note on the Prevalence of Impaternity in Jamaica

The Editor,

Sir,

Genetics studies often depend on the certainty of correct genotypes in both parents. In Jamaica, it is common knowledge that some fathers may not be the true biological father, but the prevalence of impaternity is not published because of the difficulties and expense of determining the biological fathers by DNA studies. Variant haemoglobins are usually readily detectable, and data from family studies of affected cases diagnosed by newborn screening have been used to determine the prevalence of impaternity at the time of birth. The three most common forms of sickle cell disease, homozygous sickle cell (SS) disease, sickle cell-haemoglobin C (SC) disease and sickle-beta thalassaemia (combining beta^{+} and beta° forms), result from the inheritance of variant haemoglobin genes from both parents.

Two databases were available (Table): 431 cases of sickle cell disease detected by newborn screening in the screening programme (August 4, 2008 to June 30, 2016) in the south and west of Jamaica, and 526 babies with sickle cell disease detected during the screening of 100 000 consecutive deliveries at Victoria Jubilee Hospital in Kingston (June 25, 1973 to December 28, 1981). For the diagnosis of SS disease, greater efforts were made to complete family studies, and in the more recent study, only nine mothers were not tested (one mother died, five infants died within two weeks and three declined), but of the 422 mothers tested, all carried the relevant variant genes. In the Jubilee study, 11 mothers were not tested, but of the 515 mothers tested, all carried variant genes. For the more recent study, of the 302 fathers tested, 31 (10.3%) did not carry the variant genes, and the most likely explanation is that these were not the biological fathers. Furthermore, fathers carrying abnormal genes were assumed to be the biological parent, but with a common gene such as the sickle cell trait, it is feasible that some were identified by chance and that the true prevalence of impaternity is greater than the figure of 10.3%.

Table: Prevalence of abnormal genes in parents of babies with the more common forms of sickle cell disease screened at birth

Southern and Western Jamaica (n = 431)				
		SS disease (n = 227)		
	Tested	**'S' gene present**	**'S' gene absent**	**Proportion**
Mothers	222 (97.8%)	222	0	0%
Fathers	181 (79.7%)	160	21	11.6%
		SC disease (n = 162)		
	Tested	**'S or C' gene present**	**Neither gene present**	**Proportion**
Mothers	158 (97.5%)	222	0	0%
Fathers	84 (51.9%)	77	7	8.3%
		Sickle cell-ß thalassaemia (Sß thal) disease (n = 42)		
	Tested	**'S or bthal' gene present**	**Neither gene present**	**Proportion**
Mothers	42 (100%)	42	0	0%
Fathers	37 (88.1%)	34	3	8.1%

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Victoria Jubilee Hospital (n = 526)				
		SS disease (n = 311)		
	Tested	**'S' gene present**	**'S' gene absent**	**Proportion**
Mothers	308 (99.0%)	308	0	0%
Fathers	247 (79.4%)	218	29	11.7%
		SC disease (n = 167)		
	Tested	**'S or C' gene present**	**Neither gene present**	**Proportion**
Mothers	160 (95.8%)	160	0	0%
Fathers	51 (30.5%)	46	5	9.8%
		Sß thal disease (n = 48)		
	Tested	**'S or bthal' gene present**	**Neither gene present**	**Proportion**
Mothers	48 (100%)	48	0	0%
Fathers	29 (88.1%)	27	2	7.4%

The two studies are not directly comparable: one in rural areas and the other in the Corporate area. They were also separated by nearly 40 years. It is interesting, therefore, to note the similarity of impaternity rates in the two studies: 11.6% and 11.7% in the fathers of babies with SS disease. These observations should sound a note of caution for genetic studies in Jamaica and probably the Caribbean.

Keywords: Impaternity, Jamaica, prevalence, sickle cell disease

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